

The following pages on

*Lycaena helle* (Violet Copper)

are an unmodified extract from chapter 5.17 of the publication *EUROPEAN BUTTERFLIES: A PORTRAIT IN PHOTOGRAPHS*.

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The **notation** used for identifying wing-pattern elements is also available as a free download from the above web-site.

Because chapter 5.17 contains pages on other *Lycaena* species too, some **cross-references** in the present extract cannot be followed.

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*Lycaena helle*

## Small Copper Group

## Violet Copper

**Taxonomy and Systematics**

There is one subspecies in Europe:

*L. h. helle*.

Despite the different appearance and geographical isolation of Fennoscandian races, they are not generally treated as a distinct subspecies.

**Distribution**

The species is found in central and northern Europe and across Asia. In Europe, it is found in widely separated colonies, especially in a broad southwest to northeast belt from east-central France to Poland, and in much of Fennoscandia. There are also colonies in the eastern Pyrenees, in a region around eastern Belgium and in Romania.

**Foodplant and Habitat**

The main foodplant is *Polygonum bistorta* (Bistort) in most of Europe. In parts of Scandinavia, however, *L. helle* may use *P. viviparum* (Alpine Bistort) and possibly *Rumex* (Sorrel) species. *P. bistorta* is found in wet places, quite often marshes and bogs, and thus *L. helle* is found in such wet habitats, often in partially wooded areas and often near open water. In Fennoscandia the principal habitat is, reportedly, damp meadows cut in a traditional way.

**Flight-time**

The species is single-brooded, and is typically at its peak in June, though, depending on altitude and/or latitude, it may be a little earlier or later.

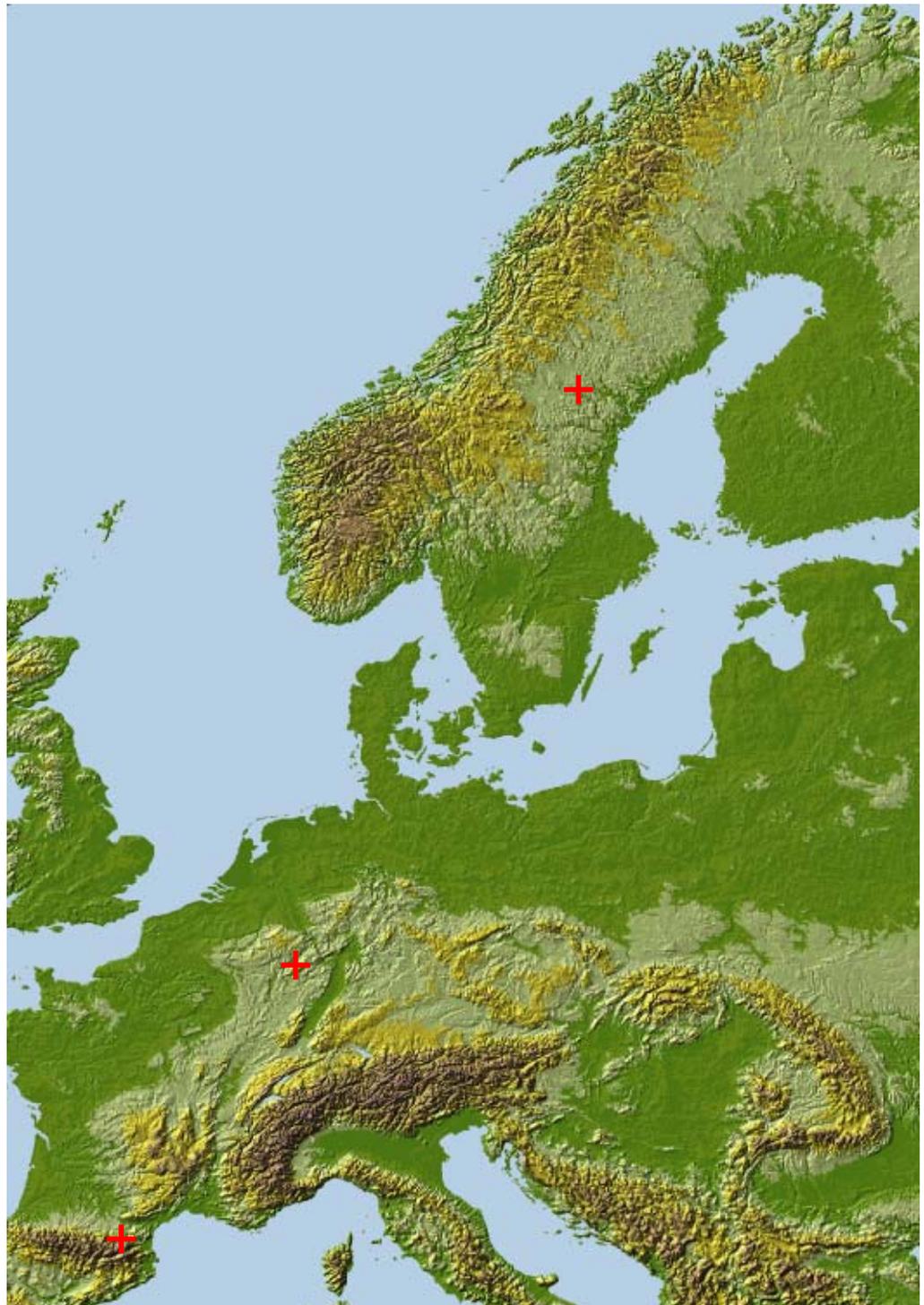
**Variation, Identification and Similar Species**

The upperside of *L. helle* is rather like *L. phlaeas* (Small Copper) with a suffusion of dark scales. Sometimes the dark scales merely obscure the underlying pattern, but with the right combination of viewing and incident light directions they produce a lovely violet/purple iridescence, especially on the males.

The male upfw has a row of large postdiscal spots, lying on a very even curve (on *L. phlaeas* they are irregular), a



large disco-cellular mark and, often, two antediscal spots, ad4 in the cell and ad3. On the upfw there are small postdiscal spots and a small disco-cellular mark. On both wings, the submarginal bands consist of the usual orange marks with inner and outer dark marks, but they are generally incomplete, especially on the upfw. The dominant feature, however, is that all of these markings, except for the submarginal orange marks, are covered by a heavy dark suffusion carrying violet iridescence. On the



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upfw a certain amount of orange ground-colour usually remains.

The female ups is quite similar to the male, but differs as follows: the dark suffusion is reduced and carries considerably less iridescence; the submarginal orange marks are complete or nearly so; and, strikingly, there is a row of bright blue marks inside the submarginal band on both wings, similar to the blue spots of *L. phlaeas* (Small Copper) f. *caeruleopunctata*, see p. 6, for example.

The unss of both sexes are similar.

The unhw has an uneven ground-colour of orange heavily speckled with black scales, so the overall effect is grey-brown. There is the usual postdiscal row of black spots, several antediscal black spots and one or two basal black spots, all of which are quite small. The submarginal band is bright orange, with the usual rows of inner and outer black marks. There are also white marks adjacent to the submarginal dark marks, outside the outer dark marks and inside the inner dark marks. The latter often stand out distinctly, and may fill the space between the submarginal band and the row of postdiscal spots. These white marks distinguish the unss of *L. helle* from all other *Lycaena* species, except for *L. phlaeas* f. *polaris* found in northern Fennoscandia, see p. 14, but this has a very different unss in other respects.



The unfw has a clear-orange ground-colour with an even row of postdiscal black spots, a disco-cellular mark and some antediscal and basal spots. The submarginal band is reduced and manifests itself as a row of black marks (the inner row of the band) with white marks inside them.

Tolman (1997) states, "In Fennoscandia, ups markings generally much reduced", but pictures shown by Henriksen and Kreutzer (1982) do not entirely support this. My limited experience and information is that the upss of males in Sweden have very little iridescence and hardly any submarginal orange marks. The overall effect is drab.



No other species is likely to be confused with *L. helle*.

**Photography**

It is fortunate that *L. helle* is on the wing when *P. bistorta* (Bistort) is in flower, so that, in most of Europe where this is the foodplant, one may look for drifts of its pink flowers and concentrate exclusively on those places to find *L. helle*. Apart from being wet underfoot, it is then straightforward to photograph *L. helle*. Looking for its usual foodplant, *P. viviparum* (Alpine Bistort), in Fennoscandia is much less easy because it is smaller and less visible than *P. bistorta*.

*L. helle* habitat in the foothills of the eastern Pyrenees in the flight-period in June (below)



*Lycaena helle*

## Small Copper Group

## Violet Copper



12 June 1993; damp area at roughly 1100 m with a large amount of the foodplant, Valley of the Aude, E Pyrenees, France (all pictures on this page)

The habitat is shown on the previous page.

The extensive violet iridescence on these males (left and right) also showed up in most other pictures of males from this site. Therefore, it seems that the gleam on *L. helle* is not too sensitive to light direction.

As may be seen, the dark scales that carry the violet structural colour cover most of the male ups and obscure the pattern of dark spots in the basal and discal regions. Some obscure orange ground-colour remains visible. The dark suffusion does not cover the submarginal bands.

The female upss (left and right) differ on average from males as follows: the violet gleam is less extensive and, as a result, the underlying pattern of dark spots is more visible; there are more obvious

rows of blue marks inside the submarginal bands on both wings; and the submarginal orange marks are more extensive, especially on the upfw.

It is stated by Higgins and Riley (1980) that females do not have a violet gleam, but the female (left) does clearly show such a gleam on the upfw in the basal and part of the discal region. An indication that the gleam is genuine is that it looks more extensive on one wing than the other where the light falls more obliquely. This point is taken up again at the bottom of the next page.

There is often a scattering of blue scales that can be seen paler than the gleam on the female (left) and also on the female without a gleam (right). These blue scales are hardly perceptible on the printed pictures, but are clear on good quality originals.

The notable features on the unss of the male (below right) and female (below left) are the white marks inside the row of submarginal black marks on both wings, especially the unhw.

The row of postdiscal spots is very even on both wings, and in this respect differs from *L. phlaeas* (Small Copper), especially on the unfw.



The male has well-developed basal and antediscal spots on the unhw and also a particularly large spot ad4 in the cell on the unfw. Even more interesting is the existence of a small but clear unfw sub-discal spot.

The relatively dusky ground-colour of the unhw compared to the unfw results from a speckling of dark scales on the former.



## Violet Copper

## Small Copper Group

*Lycaena helle*

24 May 2001; open, wet area with prolific foodplant and nearby woodland, near Arlon, SE Belgium (all following, except last on next page)

In the field, violet gleams were seen less often on insects here than on those in the foothills of the French Pyrenees shown earlier.

Compared with the female (lower insect, right), the male (upper insect) has a greater suffusion of the dark scales which produce the iridescence. Even so, the amount of visible upfw orange ground-colour on the male implies a relatively thin suffusion consistent with a reduced violet gleam, though presumably the complete absence of any gleam on either insect is related to the direction of illumination.

This picture rather nicely shows the uphw row of blue marks, and the upfw submarginal orange marks on the female. The upfw blue marks are associated with the submarginal inner dark marks, and, as mentioned before, presumably correspond to those on *L. phlaeas* (Small Copper) f. *caeruleopunctata*.

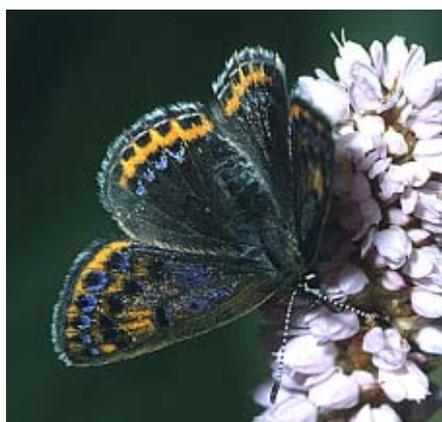


The extent of the violet iridescence on the male (above, left and centre; and right) ups is evidently somewhat dependent on the direction of the light. At its maximum, the iridescence is comparable to the males from southwestern France shown earlier, but it should be said that this insect is the most violet male seen in the field among a sizeable colony.

This male has a typical uns pattern, which seems to be rather constant and similar in both sexes. The unhw ground-colour, however, is somewhat variable, depending on the amount of black scaling on the orange.

Here the sex is known from the ups. One can, of course, identify the sex from the foreleg in principle, but unfortunately the tarsus is often hidden in the flower of the foodplant where both sexes commonly perch and feed.

Another difference between the sexes is, reportedly, the more pointed fw of males. This can be very difficult to identify reliably in photographs because any deviation from absolutely square-on distorts the wing-shape. For example, compare the apparent fw shape of the same male in these three pictures.



The uns of the female (below, left and far left) is similar to that of the male shown earlier, but the white marks inside the submarginal band are more prominent, as is usual in females.

The ups has well-developed blue marks inside the submarginal band on both wings, and an extensive, blue colouration on the upfw. It was suggested on the previous page that there could be some iridescence on females, but it is not clear in this instance that the blue colour in the basal-discal region differs in character from the ante-submarginal blue. The orange ground-colour is almost totally obliterated in the basal, discal and submarginal regions. This may be compared with other females shown at the top of this and the next page.

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## Small Copper Group

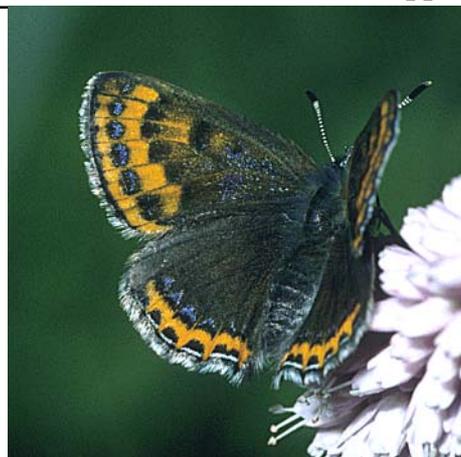
## Violet Copper



24 May 2001; see previous page, SE Belgium (all following, except bottom)

Generally there can be marked variation in the amount of orange upfw ground-colour on females.

The females (left and right) show only a small difference. In particular, the orange ground-colour shows clearly in both insects between the postdiscal row and the submarginal band, especially on the right-hand insect. In contrast, however, the female at the bottom of the previous page has hardly any orange in this region.



The sexes of the three insects (left, right and below right) are uncertain because the foreleg tarsus of each is hidden in the flower of the foodplant.

Obviously the uns of each is similar, but none has as much white as the earlier female (bottom left, previous page). There is some variation in the sizes of the unhw disco-cellular marks, the outer black marks in the unhw submarginal band and the unhw basal spots. Also, the left-hand insect has an unfw spot pd9 and the right-hand insect has some unhw postdiscal spots that are very faint.



The male (below left) has a reduced ups violet gleam. Apart from the obvious iridescence on the upfw submarginal band, a small amount can also be seen on the black spots when viewed closely. The almost complete absence of any dark suffusion on the orange ground-colour indicates that the absence of gleam there is not a 'trick of the light'.

As remarked earlier, this race of *L. helle* generally did not have extensive violet iridescence.



16 June 2010; grassy and flowery edge of a track through mixed woodland at 380 m near Östersund, north-central Sweden (below left)

The site differs from the preferred meadow habitat described earlier.



This male ups differs from races flying south of the Baltic. In particular, the violet gleam is almost entirely absent and the orange marks in the submarginal band are much reduced, which conform with pictures I have seen elsewhere, including those of Henriksen and Kreutzer (1982). Therefore, the insect is fairly representative of males in Scandinavia. Females, apparently, have more blue and orange on their upss. In the field, no violet gleam was observed so the picture is not misleading in this respect.

There is a superficial similarity between this insect and *L. tityrus* (Sooty Copper), described in the following section, but the latter does not fly in Fennoscandia. However, if similar drab races of *L. helle* were encountered in parts of Europe where *L. tityrus* does fly, the outer pale marks in the uphw submarginal band, such as it is, would rule out *L. tityrus*. Better still would be if the diagnostic unhw ante-submarginal pale marks of *L. helle* were seen. In the present case, I had a very brief glimpse of the uns and was able instantly to recognise them.